THE CLAIMS:

This listing will replace all prior versions and listings of claims in the application.

1-54. (Canceled)

55. (Previously presented) A serum-free, eukaryotic cell culture medium comprising the ingredients N-acetyl-L-cysteine, 2-mercaptoethanol, human serum albumin, D,L-tocopherol acetate, soluble human lipids for serum-free media, ethanolamine, human zinc insulin, iron-saturated transferrin, Se^{4+}, hydrocortisone, Ca^{2+}, K^{+}, Mg^{2+}, Na^{+}, CO_3^{2-}, PO_4^{3-}, D-glucose, HEPES, sodium pyruvate, phenol red, glycine, L-alanine, L-asparagine, L-aspartic acid, L-glutamic acid, L-phenylalanine, L-histidine, L-isoleucine, L-lysine, L-leucine, L-arginine HCl, L-methionine, L-proline, L-serine, L-threonine, L-tryptophan, L-tyrosine, L-valine, biotin, D-calcium pantothenate, choline chloride, folic acid, i-inositol, niacinamide, pyridoxal HCl, riboflavin, thiamine HCl, and vitamin B_{12},

wherein each of said ingredients is present in said medium at a concentration that supports the expansion of $CD34^{+}$ hematopoietic cells in suspension culture in the absence of stromal cells.

56-75. (Canceled)

76. (Currently amended) A method of expanding recombinant $CD34^{+}$ hematopoietic cells, the method comprising:

(a) contacting the recombinant $CD34^{+}$ hematopoietic cells with a serum-free medium comprising N-acetyl-L-cysteine and serum albumin; and

(b) culturing the recombinant $CD34^{+}$ hematopoietic cells in serum-free suspension culture, in the absence of stromal cells, under conditions that facilitate the expansion of the recombinant $CD34^{+}$ hematopoietic cells.

77. (Canceled)

78. (Previously presented) The method of claim 76, wherein the serum-free culture medium comprises at least one component selected from the group consisting of 2-mercaptoethanol, human serum albumin, D,L-tocopherol acetate, soluble human lipids for serum-free media, ethanolamine, human zinc insulin, iron-saturated transferrin, Se^{4+}, hydrocortisone, Ca^{2+}, K^{+}, Mg^{2+}, Na^{+}, CO_3^{2-}, PO_4^{3-}, D-glucose, HEPES, sodium pyruvate, phenol red, glycine, L-alanine, L-asparagine, L-cysteine, L-aspartic acid, L-glutamic acid, L-phenylalanine, L-histidine, L-isoleucine, L-lysine, L-leucine, L-glutamine, L-arginine HCL, L-methionine, L-proline, L-hydroxyproline, L-serine, L-threonine, L-tryptophan, L-tyrosine, L-valine, biotin, D-calcium pantothenate, choline chloride, folic acid, i-inositol, niacinamide, pyridoxal HCl, riboflavin, thiamine HCl, and vitamin B_{12}.

79. (Previously presented) The method of claim 76, wherein the serum-free culture medium comprises 2-mercaptoethanol, human serum albumin, D,L-tocopherol acetate, soluble human lipids for serum-free media, ethanolamine, human zinc insulin, iron-saturated transferrin, Se^{4+}, hydrocortisone, Ca^{2+}, K^{+}, Mg^{2+}, Na^{+}, CO_3^{2-}, PO_4^{3-}, D-glucose, HEPES, sodium pyruvate, phenol red, glycine, L-alanine, L-asparagine, L-aspartic acid, L-glutamic acid, L-phenylalanine, L-histidine, L-isoleucine, L-lysine, L-leucine, L-arginine HCL, L-methionine, L-proline, L-serine, L-threonine, L-tryptophan, L-tyrosine, L-valine, biotin, D-calcium pantothenate, choline chloride, folic acid, i-inositol, niacinamide, pyridoxal HCl, riboflavin, thiamine HCl, and vitamin B_{12}.

80. (Previously presented) The method of claim 76, wherein the serum-free medium comprises at least one component selected from the group consisting of a trace element, a glucocorticoid, an inorganic salt, an energy source, a buffering agent, a pyruvate salt, a pH indicator, an amino acid, and a vitamin.

81. (Previously presented) The method of claim 76, wherein the serum-free medium comprises at least one cytokine or at least one growth factor.

82. (Previously presented) The method of claim 76, wherein the serum-free medium comprises at least one glucocorticoid.

83. (Previously presented) The method of claim 82, wherein the at least one glucocorticoid is a hydrocortisone.

84. (Currently amended) The method of claim 76, wherein the recombinant $CD34^{\pm}$ hematopoietic cells are expanded at 37°C.

85. (Currently amended) The method of claim 76, wherein the recombinant $CD34^{\pm}$ hematopoietic cells are expanded for 6-8 days.

86. (Currently amended) The method of claim 76, wherein the recombinant $CD34^{\pm}$ hematopoietic cells are human cells.

87. (Currently amended) A method of expanding recombinant $CD34^{+}$ hematopoietic cells in serum-free culture, the method comprising:

(a) obtaining recombinant $CD34^{+}$ hematopoietic cells by introducing a nucleic acid construct into $CD34^{+}$ hematopoietic cells; and

(b) expanding the cells in serum free suspension culture comprising N-acetyl-L-cysteine and serum albumin, in the absence of stromal cells, under conditions that facilitate the expansion of the cells.

88. (Canceled)

89. (Previously presented) The method of claim 87, wherein the serum-free culture medium comprises at least one component selected from the group consisting of 2-mercaptoethanol, human serum albumin, D,L-tocopherol acetate, soluble human lipids for serum-free media, ethanolamine, human zinc insulin, iron-saturated transferrin, Se^{4+}, hydrocortisone, Ca^{2+}, K^{+}, Mg^{2+}, Na^{+}, CO_3^{2-}, PO_4^{3-}, D-glucose, HEPES, sodium pyruvate, phenol red, glycine, L-alanine, L-asparagine, L-cysteine, L-aspartic acid, L-glutamic acid, L-phenylalanine, L-histidine, L-isoleucine, L-lysine, L-

leucine, L-glutamine, L-arginine HCL, L-methionine, L-proline, L-hydroxyproline, L-serine, L-threonine, L-tryptophan, L-tyrosine, L-valine, biotin, D-calcium pantothenate, choline chloride, folic acid, i-inositol, niacinamide, pyridoxal HCl, riboflavin, thiamine HCl, and vitamin B_{12}.

90. (Previously presented) The method of claim 87, wherein the serum-free culture medium comprises 2-mercaptoethanol, human serum albumin, D,L-tocopherol acetate, soluble human lipids for serum-free media, ethanolamine, human zinc insulin, iron-saturated transferrin, Se^{4+}, hydrocortisone, Ca^{2+}, K^{+}, Mg^{2+}, Na^{+}, CO_3^{2-}, PO_4^{3-}, D-glucose, HEPES, sodium pyruvate, phenol red, glycine, L-alanine, L-asparagine, L-aspartic acid, L-glutamic acid, L-phenylalanine, L-histidine, L-isoleucine, L-lysine, L-leucine, L-arginine HCL, L-methionine, L-proline, L-serine, L-threonine, L-tryptophan, L-tyrosine, L-valine, biotin, D-calcium pantothenate, choline chloride, folic acid, i-inositol, niacinamide, pyridoxal HCl, riboflavin, thiamine HCl, and vitamin B_{12}.

91. (Previously presented) The method of claim 87, wherein the serum-free medium comprises at least one component selected from the group consisting of a trace element, a glucocorticoid, an inorganic salt, an energy source, a buffering agent, a pyruvate salt, a pH indicator, an amino acid, and a vitamin.

92. (Previously presented) The method of claim 87, wherein the serum-free medium comprises at least one cytokine or at least one growth factor.

93. (Previously presented) The method of claim 87, wherein the serum-free medium comprises at least one glucocorticoid.

94. (Previously presented) The method of claim 93, wherein the at least one glucocorticoid is a hydrocortisone.

95. (Previously presented) The method of claim 87, wherein the cells are expanded at 37°C.

96. (Previously presented) The method of claim 87, wherein the cells are expanded for 6-8 days.

97. (Previously presented) The method of claim 87, wherein the cells are human cells.

98. (Previously presented) A method of providing recombinant $CD34^+$ hematopoietic cells to a mammal comprising:

(a) expanding recombinant $CD34^+$ hematopoietic cells according to the method of claim 76; and

(b) introducing said recombinant cells into said mammal.